

North American *Pterocheilus*. I. Subgenus *Onchopterocheilus*
(Hymenoptera: Eumenidae)

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Abstract.—The subgenus *Onchopterocheilus* Bohart is characterized by having the last 2 antennal segments much reduced in the male. This western North American group contains 14 species including 4 new ones: *aridulus*, *lustratus*, *russulus*, and *salis*. Descriptions are augmented by keys and illustrations.

Since my revision of the genus in 1940 (Ann. Ent. Soc. Amer., 33:162-208) and a supplementary paper in 1950 (Proc. Biol. Soc. Wash., 63:195-202), 4 new species of subgenus *Onchopterocheilus* Bohart have been discovered and are described herein. This brings the total to 14, all occurring west of the 100th meridian in the United States and northern Mexico.

The subgenus has basket-forming labial palpi in the female, common to all species in the genus. However, the male is unique in *Pterocheilus* by having the last 2 antennal articles much reduced, forming a small hook (Fig. 16) or mostly contained within the third to last article (Fig. 17). Females differ from those of subgenus *Micropterocheilus* by their stout, 5-toothed mandibles (Fig. 9). This feature does not distinguish them from subgenus *Megapterocheilus*, but species of the latter are nearly all larger, the clypeus less polished, and the metanotum less bulging. Nevertheless, the subgeneric characters of the male are more distinctive than those of the female. The aedeagus of *Onchopterocheilus* is unique in having stout teeth mediolaterally (Fig. 22).

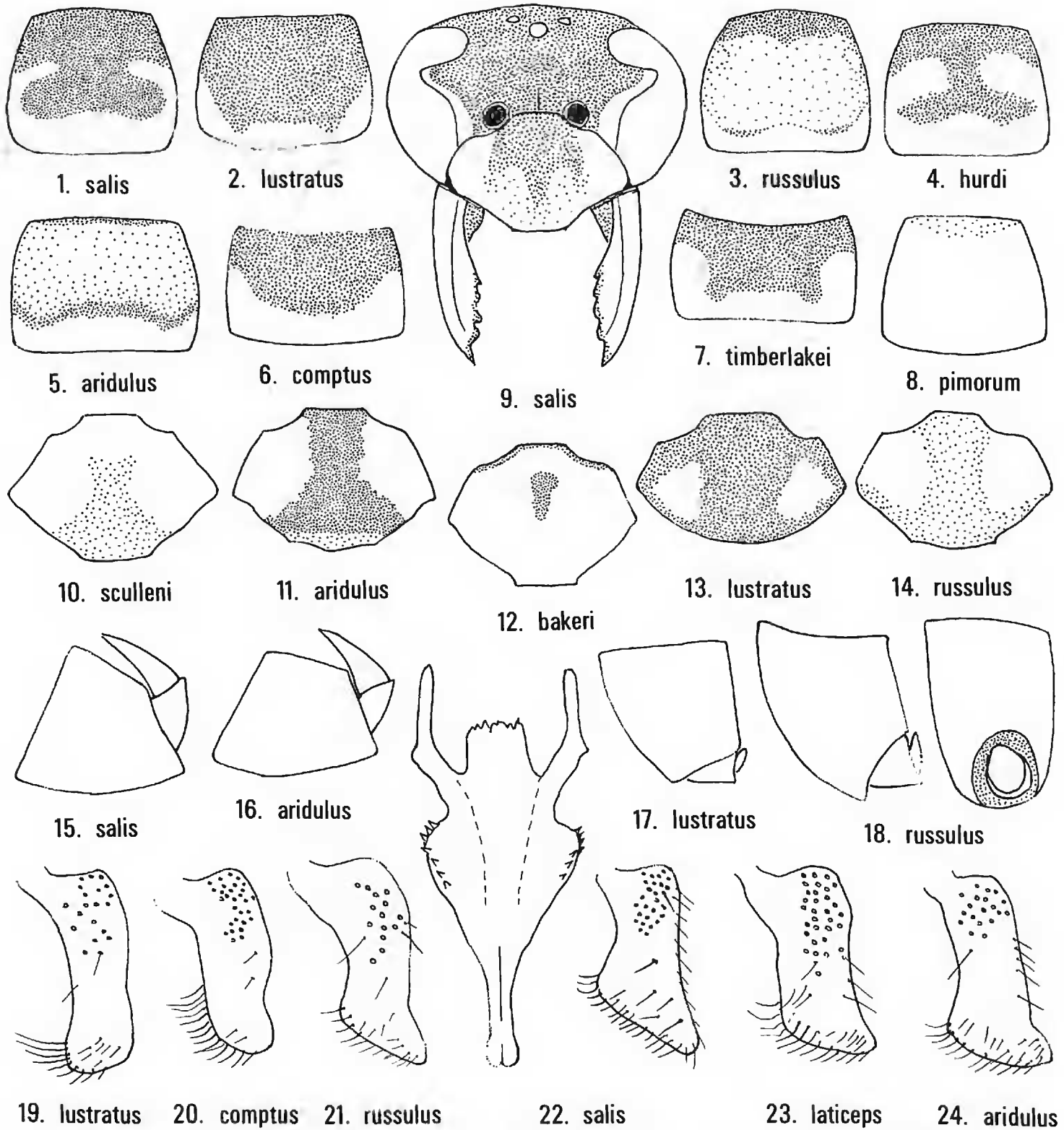
Holotypes are deposited in the University of California Bohart Museum (DAVIS). Paratypes will be distributed to other museums as far as possible.

Abbreviations used in the keys and descriptions: F-I etc., flagellomere; MOD, median ocellus diameter; T-I etc., tergum; S-I etc., sternum.

KEYS TO THE SUBGENUS *ONCHOPTEROCHEILUS*

Males

1. Antennal hook tiny, largely concealed within F-IX, in any case not extending half of ventral length of F-IX (Figs. 17, 18) 2
Antennal hook small but extending at least half of ventral length of F-IX (Figs. 15, 16) 8
2. Legs mostly red and white (or rarely red and pale yellow) 3
Legs mostly black and yellow or pale yellow, no appreciable red 5
3. T-II weakly and finely punctate medially *russulus* Bohart
T-II coarsely punctate medially 4
4. T-II with large attached spots, usually extensively reddish .. *sculleni* Bohart
T-II with free spots, if any; not reddish *laticeps* Cresson



Figures 1-24. 1-8. Color pattern, tergum II. 9. Face. 10-14. Clypeal color pattern. 15-18. Last 3 antennal segments. 19-21, 23, 24. Right digitus. 22. Flattened aedeagus and digitus. Figures 1-14, females (dense stipple is black, light stipple is red); 15-24, males.

- 5. T-II with attached yellow spots which approach each other medially (as in Fig. 4), punctation of T-II coarse, T-I without appreciable erect hair 6
- T-II without free or attached spots (as in Figs. 5, 6), punctation of II fine to moderate, T-I with some erect hair 7
- 6. Midfemur with a prominent basoventral knob, T-II medially rough ... *hurdi* Bohart
- Midfemur without a prominent basoventral knob, T-II not rough medially *trachysomus* Bohart
- 7. Scutellum and propodeum dark, clypeal apex with a fine fringe of silvery hair *lustratus* Bohart

- Scutellum and propodeum with yellow spots, clypeal apex bare
 *comptus* Cresson
8. T-II black and yellow, *or* nearly all yellow 9
 T-II black and whitish 12
9. T-II with attached yellow spots which approach each other medially, *or*
 nearly all yellow 10
 T-II posterior yellow band usually u-shaped but in any case without
 converging spots 11
10. T-II and rest of body nearly all yellow *pimorum* (Viereck)
 T-II with a roughly x-shaped median black mark, body not nearly all
 yellow *micheneri* Bohart
11. Propodeum with a longitudinal sublateral ridge, midfemur with a baso-
 lateral depression extending half its length *timberlakei* Bohart
 Propodeum not ridged, midfemur without a depression . . *bakeri* Cameron
12. Hindfemur with considerable red coloration distally 13
 Hindfemur with little or no red coloration distally 14
13. T-II with large, free, white spots; clypeus not darkened toward apex . . .
 *aridulus* Bohart
 T-II without free spots or only tiny ones; clypeus usually darkened toward
 apex *panamintensis* Bohart
14. T-II with spots that are attached *or* nearly so, and that approach each
 other medially, forewing membrane strongly yellowed, scutellum usu-
 ally with 2 white spots *salis* Bohart
 T-II without attached spots, or these not approaching each other medially,
 forewing membrane mostly clear, scutellum usually all or nearly all
 black *hirsutipennis* Bohart

Females

1. Abdomen black and yellow, at least on T-I-II 2
 Abdomen black and whitish, often with red; red and white; red and
 yellowish, *or* nearly all yellow 7
2. T-II posterior band without attached yellow spots which approach each
 other medially (Figs. 6, 7) 3
 T-II posterior band with attached yellow spots which approach each other
 medially (Fig. 4) 5
3. Clypeal apex sharply truncate (Fig. 12), yellow markings of T-II some-
 what u-shaped, T-III-V yellow marked *bakeri* Cameron
 Clypeal apex not sharply truncate, other characters various 4
4. Propodeum with a distinct, sublateral, longitudinal ridge; T-III-V whit-
 ish; T-II pale markings somewhat u-shaped (Fig. 7); T-I summit without
 semi-erect hair *timberlakei* Bohart
 Propodeum rounded sublaterally, all tergal marks yellow, those of T-II
 not u-shaped (Fig. 6); T-I summit with considerable semi-erect hair
 *comptus* Cresson
5. T-II with medial punctures quite fine and sparse, scutum without yellow
 stripes *micheneri* Bohart
 T-II with medial punctures moderate to coarse, scutum various 6

6. T-II with medial punctures close, coarse, making texture rough, scutum with a pair of yellow stripes *hurdi* Bohart
 T-II with medial punctures moderate, separated by shagreening, scutum without yellow stripes *trachysomus* Bohart
7. T-II medially with coarse, rather close, well impressed punctures 8
 T-II medially with fine to moderate, well spaced, weakly impressed punctures 10
8. Clypeus with median black areas coarsely, somewhat longitudinally, punctate; T-I-II without red *panamintensis* Bohart
 Clypeus with median black or red area not coarsely punctate; T-I-II sometimes with considerable red 9
9. Clypeus medially black, sometimes red toward apex, pale spots of scutellum separated by more than 1 MOD *laticeps* Cresson
 Clypeus red and white *or* all red, without black (Fig. 10), pale spots of scutellum separated by 1 MOD or less *sculleni* Bohart
10. T-I and/or II extensively reddish (Figs. 3, 5) 11
 T-I or II not extensively reddish (Figs. 1, 2, 8) 12
11. Pronotum and scutellum extensively red, clypeus white with a median red mark (Fig. 14) *russulus* Bohart
 Pronotum and scutellum not red, clypeus white with a median black mark, clypeal apex usually red (Fig. 11) *aridulus* Bohart
12. T-II pale band with 2 (or 3) small but definite indentations in front (Fig. 2) 13
 T-II nearly all yellow (Fig. 8) *or* pale band with attached and converging spots (Fig. 1) 14
13. T-I with abundant, erect, fulvous hair, propodeum all dark
 *lustratus* Bohart
 T-I without noticeable erect hair, propodeum with a lateral pale spot *hirsutipennis* Bohart
14. Clypeal apex rather squarely truncate, abdomen mostly yellow (Fig. 8) *pimorum* Viereck
 Clypeal apex rounded truncate (Fig. 9) abdomen black and white, T-II white band with attached and converging spots (Fig. 1) *salis* Bohart

***Pterocheilus (Onchopterocheilus) aridulus* Bohart, NEW SPECIES**

Male holotype.—Length 9 mm. Black and whitish as follows: scape in front, clypeus, interantennal spot, lower orbit, postocular strip, pronotum above, scutellar spots, metanotum mostly, femora distally, tibiae outwardly, upper mesopleural spot, posterolateral propodeal spot, posterior bands on T-I–VI and S-II, free spots on T-II, lateral spots on S-III–V; orange red are: flagellum inwardly, legs partly; wings nearly clear. Pubescence silvery, pollinose on terga. Punctures fine on clypeus, moderate and slightly spaced on frons and T-II, coarse and about a puncture diameter apart on scutum, coarse and mostly close on scutellum and mesopleuron. F-X–XI small but reaching halfway to base of F-IX (Fig. 16), clypeal apex slightly convex, midfemur with a slight basoventral knob, cuspis shoe-like (Fig. 24).

Female.—Length 9.5 mm. About as in male except: clypeus with a black median

band and reddish apex; orange red on propodeum laterally, legs extensively, T-I-II discally, S-II partly; no free white spots on T-II (Fig. 5).

Types.—*Holotype male*: Lone Pine Creek, Inyo Co., California, VI-6-39, on *Eriogonum fasciculatum* (R. M. Bohart, DAVIS). *Paratypes*: 17 males, 14 females, V-14–VIII-15. California. Lone Pine Creek, Independence, Antelope Springs, Mazurka Canyon, and Darwin Falls, Inyo Co.; Benton, Mono Co. Nevada. Nixon, 7 mi E Hiko, Wadsworth, Pyramid Lake, and 10 mi S Wendover. Utah. Paradise Canyon and Snow Canyon, Washington Co.; Riverside, Clark Co.; 30 mi S Park Valley. Arizona. 18 mi S Gila Bend. Sonora. 5 mi S Magdalena.

Discussion.—*P. laticeps* now turns out to be a group consisting of 3 closely related species, *laticeps*, *aridulus*, and *russulus* [all with similar digitus (Figs. 21, 23, 24)]. In *aridulus* the male antennal hook is largely external (Fig. 16) in contrast with the other 2 species; and T-II has large, detached whitish spots. Both sexes have relatively fine punctation on T-II. This does not separate females from *russulus*, but in that species females have the pronotum and scutellum extensively red.

***Pterocheilus (Onchopterocheilus) lustratus* Bohart, NEW SPECIES**

Male holotype.—Length 9 mm. Black and whitish yellow as follows: scape in front, mandible dot, clypeus, postocular dot, pronotum above, tegula partly, metanotal spot, upper mesopleural spot, femora distally, tibiae and tarsi mostly, posterior bands on T-I–III and S-II–VI; inner aspect of flagellum orange red; wings weakly stained. Pubescence silvery on clypeus and slightly protruding in front of apex, inconspicuous elsewhere except dark and erect on frons, abundant and erect on T-I. Punctation: quite fine on clypeus, moderate and close on frons, scutum, mesopleuron, and terga. F-X–XI tiny, mostly hidden in F-IX (Fig. 17); clypeal apex weakly concave-truncate; midfemur simple; cuspis clavate (Fig. 19).

Female.—About as in male except: clypeus with a longitudinal median black band, or black with a pair of lateral whitish spots (Fig. 13); T-I–VI with white bands (Fig. 2), S-II white banded, S-III–V with lateral white spots; tarsi dark.

Types.—*Holotype male*: Kramer Hills, San Bernardino Co., California, IV-11-64 (R. M. Bohart, DAVIS). *Paratypes*: 13 males, 23 females, III-11–V-3. California. Kramer Hills, 6 mi W Inyokern, Kern Co.; Little Rock and 10 mi S Lancaster, Los Angeles Co.; 5 mi SW Lucerne Valley, Apple Valley, and Desert Springs, San Bernardino Co.; Deep Canyon and Joshua Tree Monument, Riverside Co.

Discussion.—An apparently close relative of *lustratus* is the much commoner *hirsutipennis*. However, *lustratus* males have the antennal hook much reduced (Fig. 17) and both sexes have T-I quite hairy.

***Pterocheilus (Onchopterocheilus) russulus* Bohart, NEW SPECIES**

Male holotype.—Length 9 mm. Black, white, and orange red; white are: scape in front, clypeus, lower orbit, postocular dot, pronotum above, tegula, metanotum mostly, upper mesopleural spot, propodeal dot and valve; spots or stripes on coxae, femora, tibiae; posterior bands on T-I–VI and S-II, lateral spots on S-III–V; orange red are: mandible, inner aspect of flagellum, legs extensively, wings weakly stained. Pubescence silvery on clypeus, otherwise inconspicuous. Punctation weak on clypeus, moderate and close on frons and notum, moderate on

terga, T-II a little shiny. F-X–XI tiny, mostly hidden in F-IX (Fig. 18), clypeal apex weakly convex; midfemur simple; cuspis shoe-like (Fig. 21).

Female.—Length about 10 mm. Markings as in male except: orange red on median longitudinal clypeal band (Fig. 14), pronotum anteriorly and laterally, scutellum except laterally, propodeum partly, T-I basolaterally, T-II (Fig. 3) and S-II discally.

Types.—*Holotype male*: Surprise Canyon, Inyo Co., California, V-9-58 (R. M. Bohart, DAVIS). *Paratypes*: 10 males, 23 females, IV-2–V-30. California. Surprise Canyon and Lone Pine, Inyo Co.; Taquitz Canyon and Deep Canyon, Riverside Co.; Borrego Valley, San Diego Co. Arizona. Maran, Wickenburg, 5 mi N Florence, Organ Pipe Park, Quartzite. Nevada. Near Riverside and 10–29 mi SW Mesquite, Clark Co.

Discussion.—As in *laticeps*, the male antennal hook is reduced (Fig. 18) and reddish markings are extensive, at least on the legs. However, both sexes of *russulus* have T-II punctation relatively fine, and females have the pronotum and scutellum mostly red.

Pterocheilus (Onchopterocheilus) salis Bohart, NEW SPECIES

Male holotype.—Length 10.5 mm. Black and white as follows: scape in front, clypeus, mandible, lower orbit, interantennal dots, postocular strip, pronotum above, scutellar spots, metanotal band, upper and lower mesopleural spots, large propodeal lateral spot, legs extensively, broad posterior bands on T-I–VI, that on II with attached spots (as in Fig. 1), S-I–VI broadly; orange red on flagellum inwardly and a little on midfemur medially; wings reddish stained. Pubescence silvery on clypeus, inconspicuous elsewhere. Punctation fine on clypeus, moderate and close on frons, more coarse on scutum, moderate on tergal apices, fine at middle of T-II. F-X–XI small but nearly reaching base of F-IX (Fig. 15), clypeal apex nearly truncate, midfemur simple, flattened aedeagus and shoe-like cuspis (Fig. 22).

Female.—Length 11.5–12.0 mm. About as in male except: clypeus black basally, whitish medially, reddish apically (Fig. 9), mandible pale yellow but orange tinted, legs with more orange including tarsi mostly, clypeus a little striatopunctate, not polished, T-II markings (Fig. 1).

Types.—*Holotype male*: Alkali Lake, Lake Co., Oregon, VII-26-86, on *Chrysothamnus* (R. M. Bohart, DAVIS). *Paratypes*: 6 females, same data as type; 4 males, 2 females, topotypical but collected VII-17-88.

Discussion.—*P. salis* is the largest species in the subgenus, the females exceeding 11 mm in length. Since it is known only from the type series, little can be said about variation or distribution. Among black and whitish species with large attached spots on T-II (Fig. 1) and rather fine T-II medial punctation, *salis* is distinguished in the male by the mostly external antennal hook (Fig. 15), and in the female by the rounded-truncate clypeal apex (Fig. 9). All females of the type series have a 3-pronged black blotch on the clypeus, but it varies considerably in extent. One of the male paratypes has the spots of T-II narrowly disconnected from the apical band.